# Space Weather Forecast

Issued on Thursday, 16 June 2022 at 01:19 Local

**This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales**

---

**Space Weather Forecast Headline: Chance of Moderate-class flares throughout. Chance of Minor Geomagnetic Storm intervals days 1-3 (16th-18th).**

**Analysis of Space Weather Activity over past 24 hours**

**Solar Activity:** Solar activity was Low over the last 24 hours, with occasional Common class flares observed. There are currently 8 numbered sunspot regions on the visible disc and one unnumbered region, which rotated round the northeast limb during the period. The largest and most complex region presently lies in the southwest quadrant but it didn't produce any notable flare activity over the past 24 hours. All other regions on the disc a relatively simple Alpha and Beta regions and haven't shown any significant signs of development during the period.
No Earth-directed Coronal Mass Ejections (CMEs) were observed in the available imagery.

**Solar Wind / Geomagnetic Activity:** The solar wind speed was initially slightly elevated, but increased from 15/0400UTC, with a peak of 624 km/s at 15/0556 UTC. It the subsequently settled at elevated levels between 550 and 600 km/s. The Total Interplanetary magnetic field strength, was mostly weak but a period of Moderate occurred 15/0400 UTC to 15/0845 UTC, with some notable period to a southward orientation. .The above enhancements were most likely associated with the arrival of the 13th June CME. Geomagnetic activity was Quiet to Active (Kp 2-4).

**Energetic Particles / Solar Radiation:** The count rate of energetic particles (high energy protons) was very slightly above background levels, but with no solar radiation storms thresholds reached.

**Four-Day Space Weather Forecast Summary**

**Solar Activity:** Solar activity is expected to be mostly Low, with a chance of isolated Moderate flares, most likely from the most complex spot group in the southwest quadrant.

**Solar Wind / Geomagnetic Activity:** Solar winds are expected to be elevated through days 1-3 (16th) due to waning CME effects followed by coronal enhancements. On day 4 (19th) winds are expected to decrease to slightly elevated levels as these enhancements ease.
Through days 1-3 (16th) geomagnetic activity is likely to be in the range Quiet to Active, with a chance of an isolated Minor Storm interval. This is most likely on day 1 (16th) and late day 2/early day 3 (17th/18th) during the arrival of the fast winds from coronal hole 90 and 92. On day 4 (19th), activity is expected to become Quiet to Unsettled.

**Energetic Particles / Solar Radiation:** The count rate of energetic particles (high energy protons) is forecast to remain at background, or just above background levels during the period, with only a very slight chance of an S1 or greater event occurring.

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

© Crown Copyright 2022. All Rights Reserved.

Met Office

# Space Weather Forecast

**Geomagnetic Storms:**

| Geo-Magnetic Storm Probability (Exceedance) | Level | Past 24 Hours (Yes/No) | Day 1 (00-24 UTC) (%) | Day 2 (00-24 UTC) (%) | Day 3 (00-24 UTC) (%) | Day 4 (00-24 UTC) (%) |
|---|---|---|---|---|---|---|
| Minor or Moderate | G1 to G2 | No | 30 | 20 | 20 | 5 |
| Strong | G3 | No | 1 | 1 | 1 | 1 |
| Severe | G4 | No | 1 | 1 | 1 | 1 |
| Extreme | G5 | No | 1 | 1 | 1 | 1 |

**Radio Blackouts - X Ray Flares:**

| X Ray Flares Probability | Level | Past 24 Hours (Yes/No) | Day 1 (00-24 UTC) (%) | Day 2 (00-24 UTC) (%) | Day 3 (00-24 UTC) (%) | Day 4 (00-24 UTC) (%) |
|---|---|---|---|---|---|---|
| Active | R1-R2 M Class | No | 30 | 30 | 30 | 30 |
| Very Active | R3 to R5 X | No | 5 | 5 | 5 | 5 |

**Solar Radiation Storms - (High Energy Protons):**

| Radiation Storms Probability (Exceedance) | Level ($cm^{-2}$ $sr^{-1}$ $s^{-1}$) | Past 24 Hours (Yes/No) | Day 1 (00-24 UTC) (%) | Day 2 (00-24 UTC) (%) | Day 3 (00-24 UTC) (%) | Day 4 (00-24 UTC) (%) |
|---|---|---|---|---|---|---|
| Active | ≥ S1 | No | 5 | 5 | 5 | 5 |
| Very Active | ≥ S3 * | No | 1 | 1 | 1 | 1 |
| * S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$) | | | | | | |

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

© Crown Copyright 2022. All Rights Reserved.